

REMARKS/ARGUMENTS

Claims 1, 3-8 and Claims 11-16 are active in the case. Reconsideration is respectfully requested.

The present invention relates to a process of preparing a radiation-curable urethane (meth)acrylate.

Claim Rejection, 35 USC 112

Applicants do not concur that the description of Claim 13 is indefinite with respect to the indicated description of quantitative amounts of components (B), (C), (D) and (E) relative to the amount of alkoxylated polyol. If, for instance, the total amount of alkoxylated polyol is 100 g, then the amount of (meth)acrylic acid (B) (unreacted) in the composition in addition to the 100 g amount ranges from 0.001 to 25 g, the amount of esterification catalyst (C) ranges from 0.1 to 5 g and the amount of polymerization inhibitor (D) ranges from 0.01 to 1 g. No amount of solvent (E) is specified in the claim. Accordingly, the language pertaining to amounts of ingredients is readily understood by one of skill in the art and withdrawal of the rejection is respectfully requested.

Claim Rejection, 35 USC 103

Claims 1, 3-8, 11, 12 and 14-16 stand rejected based on 35 USC 103(a) as obvious over Lokai et al, U. S. Patent 6,319,983 in view of Neuhaus et al, U. S. Patent 4,380,604. This ground of rejection is respectfully traversed.

In the first and second paragraphs on pages 2 and 3 of the Office Action the Examiner regarding Lokai et al briefly discusses steps a) and b) of the four step process described in column 2 of the patent. However, the Examiner in paragraph 4 immediately states that the *reaction product from step b) is then reacted with polyisocyanate in the*

presence of a catalyst and viscosity modifying reactive diluent. However, in his discussion, he completely ignores step c) of the process of the patent where the material obtained from step b) is reacted with at least one epoxy-functional compound in an amount that corresponds to the acid number of the mixture. Bearing in mind that the mixture of materials obtained from step a) of the process of the patent is comprised of (i) un-reacted hydroxyl-containing compound, (ii) ester from the reaction of added (meth)acrylic acid and hydroxyl-containing compound and (iii) un-reacted (meth)acrylic acid, in step c) of the process where the epoxy-functional compound is added to the material, it is added in amount to essentially completely react with the free carboxylic acid groups of un-reacted or residual (from step b)) (meth)acrylic acid. (Note the more detailed discussion of this point in the first paragraph of the document at the top of column 6. Since the proton of the carboxylic acid groups is more reactive toward the epoxy functional group than the proton of the hydroxyl group and since the amount of epoxy-functional compound added is that which corresponds to the acid number of free or residual (meth)acrylic acid, it is easy to understand that the epoxy groups of the added compound essentially do not react with the hydroxyl groups of the hydroxyl-containing compound in the mixture obtained from step b), which may have reduced (meth)acrylic acid content). Thus, the material that is obtained from step c) is comprised of (i) un-reacted hydroxyl-containing compound, (ii) ester from the reaction of added (meth)acrylic acid and hydroxyl-containing compound and (iii) (meth)acrylic acid whose acid group has been epoxidized which results in an ester compound having an ethylenically unsaturated bond and a free hydroxyl group. The disclosure of Neuhaus et al (discussed in further detail below), on the other hand, does not describe a process where in any step of the process, an epoxy-functional compound is reacted with a hydroxyl or carboxyl group containing compound. How then can the two patents be properly combined and stated as suggesting the present process?

The Neuhaus et al patent discloses a process for preparing a radiation curable acrylic acid composition. For the process a polyisocyanate compound is reacted with a hydroxyalkyl acrylate and an ethylenically unsaturated partial ester either sequentially or at one time. This is clear from the disclosure at column 4, lines 5-10 and in the examples. On the other hand, in Lokai et al, by the time material is reacted with a polyisocyanate, the coreactant is a mixture of i) un-reacted hydroxyl-containing compound, (ii) ester from the reaction of added (meth)acrylic acid and hydroxyl-containing compound and (iii) (meth)acrylic acid whose acid group has been epoxidized which results in an ester compound having an ethylenically unsaturated bond and a free hydroxyl group. Applicants maintain that in view of these differences, it would not be clear to one of skill in the art to combine the references and arrive at a process as presently claimed.

With regard to the matter of a relationship between *reactive diluents* (Lokai et al) and hydroxyalkyl (meth)acrylates as stated by the Examiner in paragraph 6 where it seems to be stated that they are the same, applicants contend to the contrary that they are not the same type of compounds. The hydroxyalkyl (meth)acrylates of Neuhaus et al are not the reactive diluent of Lokai et al which, as described in column 8 of the patent, are monomer compounds such as (meth)acrylic acid esters of various diol and triol compounds with unsaturated carboxylic acids. These compounds do not include hydroxyalkyl (meth)acrylate esters. Thus, one of skill in the art would not replace the reactive diluents of Lokai et al with the hydroxyalkyl (meth)acrylate esters of Neuhaus et al in an attempt to arrive at the present invention.

Applicants maintain their position with respect to the Paulus et al patent as previously stated.

In view of the above comments, applicants maintain that cited prior art does not suggest the present invention and withdrawal of the rejection is respectfully requested.

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It is believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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